

We Claim:

1. A modular computer system for mounting in a multi-tiered support, comprising:

- 5 a computer chassis configured for mounting in the multi-tiered support;
a computer component within the computer chassis;
an evaporator in thermal communication with the computer component, the evaporator being configured to dissipate heat from the component by evaporating liquid coolant from a stream of liquid coolant to produce a stream of coolant vapor;
10 a condenser configured to dissipate heat from the stream of coolant vapor to add liquid coolant to the stream of liquid coolant; and
an air mover configured to cool the condenser.

15 2. The apparatus of claim 1, wherein the chassis is a 1U rackmount chassis.

3. The apparatus of claim 1, wherein the evaporator and the condenser are configured as a gravity-driven, pumpless, closed-loop cooling system.

20 4. The apparatus of claim 1, wherein the evaporator and the condenser are part of a closed-loop cooling system, and further comprising a coolant pump configured to pump coolant through the closed-loop cooling system.

25 5. The apparatus of claim 1, wherein the condenser defines a downward coolant pathway configured for the coolant to travel gravitationally downward while condensing from the stream of coolant vapor to the stream of liquid coolant.

6. The apparatus of claim 1, and further comprising:

a second computer component within the chassis; and

a second evaporator in thermal communication with the second computer component, the second evaporator being configured to dissipate heat from the second component by evaporating liquid coolant from a stream of liquid coolant to produce a second stream of coolant vapor;

wherein the condenser is configured to dissipate heat from the second stream of coolant vapor to add liquid coolant to the stream of liquid coolant.

7. The apparatus of claim 6, wherein:

the second evaporator is configured to dissipate heat from the second component by evaporating coolant from the stream of liquid coolant to produce a second stream of coolant vapor; and

the condenser is configured to dissipate heat from the second stream of coolant vapor to add liquid coolant to the stream of liquid coolant.

8. The apparatus of claim 7, wherein:

the stream of liquid coolant and the first stream of coolant vapor both extend from the first evaporator to the second evaporator through a common passage; and

the first and second streams of coolant vapor intermix and extend from the second evaporator to the condenser through a common passage.

9. The apparatus of claim 1, wherein the air mover is further configured to pump air heated by the condenser out one or more exhaust vents in the chassis.

10. The apparatus of claim 9, wherein:

the air mover is a plurality of fans extending across an intermediate portion of the chassis to define two chambers, the fans being configured to move air from a first chamber of the two chambers to a second chamber of the two chambers; and

the chassis exhaust vents ventilate the second chamber.

11. The apparatus of claim 1, and further comprising one or more additional computer components within the computer chassis, wherein the air mover causes airflow that directly cools the one or more additional components.

5 12. The apparatus of claim 11, wherein the air mover blows directly toward the one or more additional computer components.

13. The apparatus of claim 11, wherein the air mover draws air through the condenser, and blows air toward the one or more additional computer components.

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14. A modular computer system for mounting in a multi-tiered support, comprising:

a computer chassis configured for mounting in the multi-tiered support;

a computer component within the computer chassis;

15 a means for evaporating liquid coolant from a stream of liquid coolant, using heat from the computer component, to produce a stream of coolant vapor;

a means for removing heat from the stream of coolant vapor; and

a means for transferring the removed heat out of the chassis.

20 15. A method for cooling a computer component, comprising:

mounting a computer chassis of a modular computer system in a multi-tiered support, the computer component being located within the computer chassis;

evaporating liquid coolant from a stream of liquid coolant, using heat from the computer component, to produce a stream of coolant vapor;

25 removing heat from the stream of coolant vapor to form the stream of liquid coolant; and

transferring the removed heat out of the chassis.

16. The method of claim 15, wherein the chassis is a 1U rackmount chassis.

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17. The method of claim 15, wherein the chassis is a thin rackmount chassis.

18. The apparatus of claim 15, wherein the step of removing is conducted in a downward coolant pathway configured for the coolant to travel gravitationally downward while condensing from the stream of coolant vapor to the stream of liquid coolant.
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